CLAIMS

We claim:

1. A method comprising:

receiving a plurality of task containers representing a plurality of tasks, where each task container is a grouping of either task containers or resource containers, which describe one or more resources required for the represented task;

generating a cost for each task based on probabilities that the task will influence each other task in the plurality of tasks using the containers; and

scheduling the task with the least cost.

2. A method as recited in claim 1 wherein the resources information comprises container information describing how to select the one or more tasks or resources.

3. A method as recited in claim 2 wherein the container information comprises at least one of:

an "AND" relationship indicating that all of the one or more tasks or resources are required;

an "XOR" relationship indicating that only one of the one or more tasks or resources is required; and

an "OR" relationship indicating that one or more of the one or more tasks or resources are required.

4. A method as recited in claim 1 further comprising:

receiving a timeslot definition associated with each of the plurality of tasks or resources, the timeslot definition defining a required timeslot for the associated task or resource.

5. A method as recited in claim 4 wherein the timeslot definition comprises an early start indicator, a late finish indicator, and a duration indicator.

6. A method as recited in claim 1 further comprising:

receiving a constraint describing a time constraint between two tasks in the plurality of tasks; and

scheduling the two tasks based on the constraint.

7. A method as recited in claim 1 wherein the generating comprises:

determining a probability that a first task in the plurality of tasks influences a second task in the plurality of tasks based on the resource information; and

adjusting the cost of the first tasks based on a function of the probability that the first task in the plurality of tasks influences the second task in the plurality of tasks.

8. A method as recited in claim 1 wherein the generating comprises:

determining a probability that a first task in the plurality of tasks supports a second task in the plurality of tasks based on the resource information; and

if the first task supports the second task, reducing the cost of the first task based on a function of the probability that the first task supports the second task.

9. A method as recited in claim 1 wherein the generating comprises:

determining a probability that a first task in the plurality of tasks competes with a second task in the plurality of tasks based on the resource information; and

if the first task competes with the second task, increasing the cost of the first task based on a function of the probability that the first task competes with the second task.

10. A method as recited in claim 1 wherein the generating comprises:

selecting a first task from among the plurality of task;

for each of the other tasks in the plurality of tasks, determining a pair-wise probability, the pair-wise probability representing a probability that the first task will compete with the other task; and

summing the pair-wise probabilities to form a total cost associated with the first task.

11. A method as recited in claim 1 wherein the resource information comprises preference information describing preferences of the one or more resources.

12. A method as recited in claim 1 wherein the generating comprises applying preference values to the tasks.

13. A method as recited in claim 1 wherein the generating comprises tabulating a cost associated with each pair of tasks.

14. A method as recited in claim 1 further comprising:

removing the scheduled task from a main task log;

adjusting probabilities associated with resources remaining in the main task log based on the scheduled task; and

re-generating a cost for each task based on probabilities that the task will influence each other task in the plurality of tasks using the resource containers.

15. A processor-readable medium having processor-executable instructions for performing a method comprising:

receiving a plurality of first resource descriptors describing first resources associated with a first candidate task and selection criteria defining how the first resources are to be selected from the plurality of first resources;

receiving a second resource descriptor describing a resource associated with a second candidate task; and

scheduling one or more of the first candidate task and the second candidate task, wherein one or more of the first resources are allocated to the first candidate task in accordance with the selection criteria.

16. A processor-readable medium as recited in claim 15 wherein the scheduling comprising:

identifying one or more of the first resources that are not the same as the second resource and that satisfy the selection criteria.

17. A processor-readable medium as recited in claim 15 further comprising:

receiving a current schedule state having currently scheduled tasks and currently scheduled resources;

determining whether the first candidate task and the second candidate task are viable based on the current schedule state; and

eliminating one or more of the first or second candidate task from consideration if the one or more of the first or second candidate task is not viable.

18. A system for scheduling a plurality of tasks, the system comprising:

a task log including a plurality of task objects representing tasks, the task objects having resource objects representing a resource required for the associated task, each of the task objects operable to return a probability that scheduling of the task will influence another task;

a cost generator operable to generate a cost for each of the tasks based on probabilities that the task will influence each other task; and

a scheduling engine operable to schedule the task with the least cost.

19. A system as recited in claim 18 wherein the task log further comprises a resource container defining a function of a plurality of resources.

20. A system as recited in claim 19 wherein the function comprises one of:

an "AND" function indicating that all of the plurality of resources are required;

an "XOR" function indicating that one and only one of the plurality of resources is required; and

an "OR" function indicating that at least one of the plurality of resources is required.

21. A system as recited in claim 18 wherein the cost generator is further operable to calculate pair-wise costs representing a cost of scheduling a first task relative to a second task.

22. A system as recited in claim 18 wherein the cost generator is further operable to tabulate pair-wise costs representing a cost of scheduling a first task relative to a second task and generate a total cost associated with each of the tasks.

23. A system as recited in claim 18 wherein the task object further comprises time constraint information indicating at least one time constraint between two of the tasks.

24. A system as recited in claim 18 wherein the task log further comprises a hierarchical arrangement of the task objects and the resource objects.

25. A system as recited in claim 18 wherein each task object is operable to return a probability that the task object competes with another task object.

26. A method comprising:

generating a cost associated with each of a plurality of tasks to be scheduled;

executing a minimum cost task; and

scheduling the minimum cost task if the minimum cost task successfully executes.

27. A method as recited in claim 26 wherein the generating comprises determining a pair-wise probability representing a probability that a first task in the plurality of tasks conflicts with a second task in the plurality of tasks.

28. A method as recited in claim 27 further comprising adjusting the pair-wise probability in response to scheduling the minimum cost task.

29. A method as recited in claim 26 wherein the generating comprises determining the costs based upon preference weights assigned to the plurality of tasks.

30. A method as recited in claim 26 further comprising determining viability of each task in the plurality of tasks.